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Richard_Denison@environmentaldefense.org on 09/23/2003 04:50:16 PM

To: oppt.ncic@epamail.epa.gov, hpv.chemrtk@epamail.epa.gov, chem.rtk@epamail.epa.gov, Karen Boswell/DC/USEPA/US@EPA, sjbarbee@archchemicals.com
cc: lucierg@msn.com, kflorini@environmentaldefense.org, rdenison@environmentaldefense.org

Subject: Environmental Defense comments on Hydroquinone bis(2-hydroxyethyl) ether (CAS# 104-38-1)

(Submitted via Internet 9/23/03 to oppt.ncic@epa.gov, hpv.chemrtk@epa.gov, boswell.karen@epa.gov, chem.rtk@epa.gov, lucierg@msn.com and sjbarbee@archchemicals.com)

Environmental Defense appreciates this opportunity to submit comments on the robust summary/test plan for Hydroquinone bis(2-hydroxyethyl) ether (CAS# 104-38-1).

The test plan and robust summaries for hydroquinone bis(2-hydroxyethyl) ether (HQEE) were prepared by Arch Chemicals. HQEE is produced from ethylene oxide and hydroquinone, and is used to produce polyurethanes that are resistant to mechanical abrasion. The sponsor states that HQEE is used solely in industrial settings and that worker exposure and environmental releases are low. However, data to substantiate those statements, including information on worker exposure limits, are not provided.

The sponsor claims that data for all HPV endpoints are available. This contention is based on the use of data from a structural analog, hydroquinone monomethyl ether (HQMME). Therefore, the sponsor, is in essence, proposing a category for these two hydroquinones. Information contained in the robust summaries is inadequate to justify use of HQMME as a surrogate, so we disagree that no new studies are needed. In particular, we recommend that a combined reproductive/developmental toxicity study be conducted and we also recommend that genetic toxicity tests be conducted on HQEE. Specific comments are as follows:

1. Chemical structures are not provided for either HQEE or HQMME. This information is an essential component of any justification for a category or the use of data from a surrogate chemical.

2. The available data for ecological endpoints appear to be adequate for HPV program purposes, although there is a heavy reliance on the use of computational estimates. HQEE appears to be biodegradable and it should not bioaccumulate in the environment. We agree that no new testing is needed for ecological endpoints.

3. The justification for using HQMME as a surrogate for HQEE is not convincing. Available information indicates that there are significant differences in the two chemicals' physical properties, ecological toxicities and most likely mammalian toxicities. These differences, coupled with a lack of information needed to assess structural similarities, does not allow us to support the use of HQMME as a surrogate for HQEE. If additional justification is provided, we would be glad to review it for its adequacy in meeting HPV requirements.

4. We also request that the sponsor explain why data from hydroquinone

itself was not considered appropriate for use as a surrogate for HQEE. Hydroquinone is a metabolite of benzene and there are numerous reports in the scientific literature indicating that it plays a key role in the toxic effects of benzene, including clastogenic effects.

5. The sponsor proposes to use data from studies of HQMME to fulfill all genetic toxicity endpoints. However, the cited micronucleus data were obtained from dermal exposure experiments, and no pharmacokinetic information was provided to demonstrate whether or not HQMME is absorbed into the body. Therefore, these data may be irrelevant to oral exposure circumstances. In addition, as noted in the preceding paragraph, the sponsor needs to explain why positive genetic toxicity data for hydroquinone were excluded from the test plan and robust summaries.

6. There are no available reproductive or developmental studies on HQEE, although there are such studies using a dermal route of exposure for the proposed surrogate, HQMME. However, we do not believe that the surrogate data from HQMME can be used until and unless our concerns described above are addressed in a scientifically sound manner. Therefore, we recommend that a combined reproductive/developmental study be conducted on HQEE.

Thank you for this opportunity to comment.

George Lucier, Ph.D.
Consulting Toxicologist, Environmental Defense

Richard Denison, Ph.D.
Senior Scientist, Environmental Defense